



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/654,438	09/04/2003	Toshiyuki Tokura	2611-0196P	5153

2292 7590 08/01/2005

BIRCH STEWART KOLASCH & BIRCH  
PO BOX 747  
FALLS CHURCH, VA 22040-0747

EXAMINER
----------

DIACOU, ARI M

ART UNIT	PAPER NUMBER
----------	--------------

3663

DATE MAILED: 08/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/654,438

Applicant(s)

TOKURA ET AL.

Examiner

Ari M. Diacou

Art Unit

3663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 17 June 2005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 7 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Onaka et al.

3. Regarding claim 1, Onaka discloses:

A Raman amplifier, comprising:

- a. an optical fiber [Fig. 1, #1] that propagates and amplifies a second signal light that is a wavelength-multiplexed signal of a first signal light and a reference light, wherein the first signal light includes a plurality of wavelengths and the reference light is out of a wavelength range of amplification; [¶ 0014, 0040]
- b. an excitation light source that outputs an excitation light for amplifying the second signal light [Fig. 1, #11];
- c. a beam splitter that splits a portion of the second signal light into the first signal light and the reference light [Fig. 1, #16] [¶ 0045, 0049];
- d. a signal light level detecting unit that detects a level of the first signal light [Fig. 1, #17];

Art Unit: 3663

- e. a reference light level detecting unit [Fig. 1, #17] that detects a level of the reference light [¶ 0045, 0049];
- f. and a signal level setting unit that [Fig. 1, #19], based on the level of the reference light, calculates a target value to control signal light level for constantly maintaining a Raman gain, and controls the output level of the excitation light in such a way that the first signal level matches with the target value [¶ 0016].

4. Regarding claim 2, Onaka discloses:

- g. The Raman amplifier according to claim 1, wherein the signal level setting unit controls the output level of the excitation light [Fig. 1, #19] [¶ 0016]

in such a way that the target value  $Ps_{on}$  is calculated as:

$$Ps_{on} = Ps_{off} \times G \times (Pref / Pref_{init})$$

where,  $Ps_{off}$  is the level of the first signal light before being amplified,  $Pref_{init}$  is the initial level of the reference light,  $Pref$  is the level of the reference light after the second signal light is amplified, and  $G$  is the Raman gain.

- h. The “calculated as” clauses are essentially method limitations or statements of intended or desired use. Thus, these claims as well as other statements of intended use do not serve to patentably distinguish the claimed structure over that of the reference. See In re Pearson, 181 USPQ 641; In re Yanush, 177 USPQ 705; In re Finsterwalder, 168 USPQ 530; In re Casey, 512 USPQ 235; In re Otto, 136 USPQ 458; Ex parte Masham, 2 USPQ 2nd 1647.

See MPEP § 2114 which states:

Art Unit: 3663

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from the prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ 2nd 1647

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than functions. In re Danly, 120 USPQ 528, 531.

Apparatus claims cover what a device is not what a device does. Hewlett-Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525, 1528.

As set forth in MPEP § 2115, a recitation in a claim to the material or article worked upon does not serve to limit an apparatus claim.

5. Regarding claim 3, Onaka discloses:

i. The Raman amplifier according to claim 1, wherein the reference light is a monitoring control light that is employed in an optical transmission system [¶ 0040].

6. Regarding claim 7, Onaka discloses:

An optical relay transmission system comprising:

j. a signal light transmitting unit that outputs a signal light that has a plurality of wavelengths, wavelength-multiplexes and transmits the signal light [Fig. 17, #2];

k. a reference light output unit that outputs a reference light of a wavelength that is out of a wavelength band of the signal light [Fig. 17, #2];

l. a Raman amplifier [Fig. 17, #4] that amplifies, based on the reference beam, the wavelength-multiplexed signal light, wherein the Raman amplifier includes

Art Unit: 3663

- m. an optical fiber [Fig. 1, #1] that propagates and amplifies a second signal light that is a wavelength-multiplexed signal of a first signal light and a reference light, wherein the first signal light includes a plurality of wavelengths and the reference light is out of a wavelength range of amplification; [¶ 0014, 0040]
  - n. an excitation light source that outputs an excitation light for amplifying the second signal light [Fig. 1, #11];
  - o. a beam splitter that splits a portion of the second signal light into the first signal light and the reference light [Fig. 1, #16] [¶ 0045, 0049];
  - p. a signal light level detecting unit that detects a level of the first signal light [Fig. 1, #17];
  - q. a reference light level detecting unit [Fig. 1, #17] that detects a level of the reference light [¶ 0045, 0049];
  - r. and a signal level setting unit that [Fig. 1, #19], based on the level of the reference light, calculates a target value to control signal light level for constantly maintaining a Raman gain, and controls the output level of the excitation light in such a way that the first signal level matches with the target value [¶ 0016].
  - s. and a signal receiving unit that receives the signal light amplified by the Raman amplifier [Fig. 17, #3].
7. Regarding claim 8, Onaka discloses:
- t. The optical relay transmission system according to claim 7 [Fig. 17], wherein a plurality of Raman amplifiers [Fig. 17, #4] including a first Raman

amplifier and a last Raman amplifier, are cascaded in such a manner that the first Raman amplifier receives the wavelength-multiplexed signal light and the signal receiving unit receives the signal light amplified by the last Raman amplifier.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Onaka as applied to claim 1 above, and further in view of Islam (USP No. 6819479). Onaka discloses a Raman amplifier with all the limitations of claim 1 of the application, but fails to disclose a gain equalizer in the optical amplifier. Islam teaches the use of a gain equalizer [Fig. 1, #27] [¶ 0012] in any optical amplifier where wave division multiplexing is employed. Therefore, it would have been obvious to one skilled in the art (e.g. an

Art Unit: 3663

optical engineer) at the time the invention was made, to include a gain equalizer in the optical amplifier for the purpose of flattening the gain profile of the optical amplifier.

11. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Onaka as applied to claim 1 above, and further in view of Islam (USP No. 6819479). Onaka discloses a Raman amplifier with all the limitations of claim 1 of the application, but fails to disclose a rare-earth-doped fiber amplifier and variable attenuator in the optical amplifier. Islam teaches the use of a rare-earth-doped fiber amplifier [Fig. 1, #24] [¶ 0010] and a variable attenuator [Fig. 1, #15] [¶ 0026]. Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to include a variable attenuator and a rare-earth-doped fiber amplifier for the purpose of raising the quality factor of each WDM channel.

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Onaka as applied to claim 1 above, and further in view of Kamada (USP Appl. No. 10/699698). Onaka discloses a Raman amplifier with all the limitations of claim 1 of the application, but fails to disclose a failsafe system by which the optical amplifier will reduce pumping power to the transmission fiber if a reference signal falls below a certain value. Kamada discloses a Raman amplifier with a loss-point detection system, whereby the optical amplifier monitors the ASS and reflected radiation coming from the transmission fiber. Kamada further teaches that if the ASS signal falls below a certain value, the amplifier will mitigate pumping of the transmission fiber. Therefore, it would have been obvious to



Art Unit: 3663


one skilled in the art (e.g. an optical engineer) at the time the invention was made, to include a failsafe in a Raman amplifier that would mitigate pumping of the transmission fiber in the event that a reference signal fell below a certain value (indicating a break in the transmission fiber) for the purpose of reducing the risk to any person who could be in contact with the harmful radiation emanating from the fiber break.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ari M. Diacou whose telephone number is (571) 272-5591. The examiner can normally be reached on Monday - Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AMD 7-15-2005

  
JACK KEITH  
PRIMARY EXAMINER  
SPE 2767